

PURCHASE DESCRIPTION

METER, NOISE FIGURE

NFONT-C

- 1.0 GENERAL This procurement requires a portable, solid-state, noise figure meter capable of making noise figure/sensitivity measurements on receiving systems in the frequency range of 10 MHz to 40 GHz using the down converted IF output from the receiver.
- 2.0 CLASSIFICATION The equipment shall meet the requirements of MIL-T-28800() ,Type III, Class 5, Style E, and Color R for Navy shipboard, submarine and shore applications with the following modifications and exceptions:
 - a. The relative humidity requirement is limited to 95% non-condensating.
 - b. The operating and non-operating altitude requirements are not invoked.
 - c. The Electromagnetic Interference requirements (EMI) of MIL-T-28800() are limited to CE01 (relaxed 20 dB), CE03 (broadband limits relaxed 20 dB below 200 kHz), CS01, CS02 (0.05 to 100 MHz) CS06, RE01 (0.03 to 15 kHz), RE02 (14 kHz to 10 GHz) and RS03.
- 3.0 OPERATIONAL REQUIREMENTS The equipment shall be capable of measuring and directly indicating noise figure in dB within the specifications and accuracies contained herein.
 - 3.1 Frequency Input (IF):
 - 3.1.1 Range: Tunable at least from 10 MHz to 300 MHz
 - 3.1.1.1 RF Input Connector: BNC / Type N female
 - 3.1.2 Tuning:
 - 3.1.2.1 Accuracy: $< \pm (1\% \text{ of IF} + 1 \text{ MHz})$
 - 3.1.2.2 Display: Digital
 - 3.1.2.3 Resolution: At least 1 MHz
 - 3.1.3 Sensitivity: At least -70 dBm to -10 dBm
 - 3.2 Measurement Range: (NF = Noise Figure)
 - 3.2.1 Noise Figure (NF): At least 0 to 25 dB
 - 3.2.1.1 Accuracy: $< \pm 0.2 \text{ dB}$
 - 3.2.1.2 Resolution: At least 0.1 dB
 - 3.2.1.3 Display: At least NF in dB

3.3 Output Signals

3.3.1 Noise source drive voltage: 28 ± 0.2 V (BNC female)

3.3.2 Recorder output:

3.3.2.1 At least DC analog voltage proportional to measured NF (BNC female)

3.3.2.2 Range: At least 0 to 1 Vdc

3.4 Noise Source (f = Measurement Frequency)

3.4.1 Drive Voltage: 28 V

3.4.1.1 Connector: BNC female

3.4.2 Frequency Range: 10 MHz to 40 GHz (two devices maximum)

3.4.2.1 10 MHz to 26 GHz: Coaxial connector (SMA compatible)

3.4.2.2 26 GHz to 40 GHz: Waveguide (WR-28 flange)

3.4.3 ENR (Excess Noise Ratio)

3.4.3.1 Range: At least 12 dB

3.4.3.2 Calibration data of ENR vs frequency supplied with each noise source

3.4.3.2.1 Data: At least 10 points (across frequency range of each noise source)

3.4.3.2.2 Resolution: At least 0.1 dB

3.4.4 VSWR: < 1.5 ($f < 26$ GHz) ; < 2.0 ($f < 40$ GHz)

4.0 GENERAL REQUIREMENTS

4.1 Power Source MIL-T-28800() nominal power source requirements are invoked.
Maximum power consumption: 150W.

4.2 Lithium Batteries Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.3 Calibration Interval The calibration interval shall be 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.

4.4 Dimensions The unit's total volume shall not exceed 29,000 cm³ (1,770 in³).

4.5 Weight The overall weight of the unit shall be nominally less than 15.9 kg (35 lb).